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| EXAMINER | |
|---|---|
| MAURO JR, THOMAS J | |

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| 2143 | |

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/752,719 | WILLIAMS ET AL. | |
| | Examiner | Art Unit | |
| | Thomas J. Mauro Jr. | 2143 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *29 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16 and 18-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 18-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. This action is responsive to the amendment filed on July 29, 2004. Claims 1-16 and 18-23 remain pending and are again presented for examination. Claim 17 has been cancelled. A formal action on the merits of claims 1-16 and 18-23 follows.

### *Response to Arguments*

2. Applicant's arguments, see Page 9 of the Remarks, filed July 29, 2004, with respect to the Obvious-type provisional (09/877,122) Double Patenting rejection (claims 1-23) have been fully considered and are persuasive. The Double Patenting rejection of claims 1-23 has been withdrawn.

3. Applicant's arguments filed July 29, 2004 have been fully considered but they are not persuasive.

(A) Applicant contends that the combination of Drummond-Murray and Crinion fail to teach suspending transmission of data frames based on a priority indicator included in a pause frame, whereas claims 1, 21 and 22 recite this limitation.

In response to argument (A), Examiner asserts that the combination of Drummond-Murray and Crinion clearly disclose all of the limitations as recited in claim 1. Drummond-Murray recites the overall framework and environment for the invention in addition to generating and transmitting pause frames to restrict the flow of traffic through ports on a switch based upon the priority of traffic flow through a particular port. First, Drummond-Murray discloses that traffic flow is restricted by generating and transmitting pause frames to suspend the flow of traffic at a switch. See Col. 4 lines 62-67 – Col. 5 lines 1-16 and Col. 8 lines 16-25 which clearly show that pause frames along with there operational codes are generated and transmitted to restrict and control the flow of traffic through ports. Secondly, Drummond-Murray (See Col. 4 lines 1-14) clearly discloses that restriction and control of traffic flow can be based upon the priority of the port, i.e. the priority of the traffic, i.e. high or low, which flows across the various ports. As mentioned in Drummond-Murray, this feature will allow restriction on less important traffic, i.e. lower priority, to be restricted, while more important traffic, i.e. higher priority, can be switched without restriction. Again, as mentioned above and in the rejection below, restriction and flow control are achieved by employing pause frames.

Crinion, discloses placing a priority indicator into the header of a frame which serve to indicate to the frame detector whether the frames are high priority frames or low priority frames. See Crinion Figures 2, 3 and 4, Col. 3 lines 13-15 and lines 50-67 and Col. 7 lines 66-67 – Col. 8 lines 1-11. Drummond-Murray not only suggests the feature of restricting traffic through ports based upon priority but also provides the motivation of providing more granularity in traffic flow control to allow higher priority traffic to flow unimpeded, while lower priority traffic is penalized/restricted more. Thus, based upon the teachings of both Drummond-Murray and

Crinion, which clearly teach the disclosed limitations along with the features suggested by Drummond-Murray for restricting based upon priority, it would have provided for an obvious combination for these two references to arrive at the limitations of claim 1. Therefore, the Examiner accordingly demurs to the assertion as the combination of Drummond-Murray and Crinion clearly teach traffic flow restriction based upon priority.

(B) Applicant contends that it would not have been obvious to combine the teachings of Crinion with Drummond-Murray without the benefit of the applicant's disclosure.

In response to argument (B), namely that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Drummond-Murray provides the suggestion and motivation to combine (See Col. 4 lines 1-14) by disclosing and suggesting that traffic can be restricted based upon the priority level of the traffic flow in order to allow a mechanism which would allow high priority frames to flow without restriction while only lower priority frames are restricted to allow more important and critical traffic to be switched, thereby delaying only a certain subset of traffic

based upon priority. In addition, in response to the argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Thus, based upon the teachings and suggestions of both Drummond-Murray and Crinion along with the level of knowledge to one of ordinary skill in the art, a proper motivation without hindsight reasoning was found.

(C) Applicant contends that Lyon does not teach or suggest storing frame forwarding information associated with the data frames in a queue, whereas claim 4 recites this limitation.

Regarding argument (C), Examiner asserts that Lyon discloses storing frame forwarding information associated with the data frame in a queue. Lyon, See Col. 6 lines 42-51 and Col. 7 lines 27-38, discloses that the forwarder has a plurality of queues which not only store cells destined for a particular output port but also stores the encapsulated cell's header which includes it's destination, i.e. frame forwarding information in addition to the emission priority, i.e. frame information, related to the cell is also stored. During patent examination and prosecution, claims must be given their broadest reasonable interpretation. *In re Van Geuns*, 988 F.2d 1181, 1184,

26 USPQ2d 1057, 1059 (Fed. Cir. 1993); *In re Prater*, 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969). Giving the instant claims their broadest reasonable interpretation, "frame forwarding information" is broad enough to read on the destination information stored in a cell's header of Lyon.

(D) Applicant contends that it would not have been obvious to combine the teachings of Lyon with Crinion and Drummond-Murray.

In response to argument (D), Examiner asserts that it would have been obvious to combine the teachings of Lyon with Crinion and Drummond-Murray. Lyon, along with Drummond-Murray is concerned with controlling the flow of traffic in data switches in an effort to reduce congestion on a network, therefore belonging to the same field of endeavor. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, storing the frame information in the respective queue, as opposed to other locations, would provide the additional benefit of faster and more efficient switching of packets

which would thereby cut down on congestion conditions and queues overflowing because the cells would be routed more quickly with little delay. This benefit, which would be knowledge available to one of ordinary skill in the art would be provide a substantial benefit to Drummond-Murray who is trying to switch frames via a more efficient system to reduce congestion likewise. This benefit, in addition to the benefit described in the action below, provides the motivation for the combination of Lyon and Drummond-Murray-Crinion.

(E) Applicant contends that the combination of Drummond-Murray-Crinion fails to disclose transmitting an auto-negotiation message that includes information relating to a priority indicator, whereas claim 9 calls for this limitation.

In response to argument (E), Examiner asserts that Drummond-Murray-Crinion and AAPA do in fact disclose the limitations as set forth in claim 9. As mentioned in the rejection below, Drummond-Murray-Crinion discloses a priority indicator contained within a frame to indicate the priority information, i.e. high priority frame or low priority frame. AAPA discloses that the auto-negotiation feature is part of the well-known IEEE 802.3 standard which provides a mechanism to automatically negotiate with other devices to determine their capabilities and available options and thereby configures the performance and operation based upon what both devices can support. See Supporting documentation on the Auto-Negotiation Standard of IEEE 802.3. As stated in the previous rejection, the use of auto-negotiation for determining device capabilities and configuring operation between devices was widely known and used. In addition,

the auto-negotiation feature has expandability bits and a next page function to provide for negotiating a variety of expandable options. Thus, it would have been obvious that one of ordinary skill in the art who would have undoubtedly known of the IEEE 802.3 and accompanying auto-negotiation feature to use such a feature to negotiate between devices to advertise the priority indicator as a device capability because it would provide a standardized method for negotiating connection capabilities with devices thereby increasing performance times and capabilities of the system. Therefore, this argument is moot as it would have been obvious to use the auto-negotiation feature to advertise a priority indicator field as taught by Drummond-Murray-Crinion.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 11-13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drummond-Murray (U.S. 6,667,985) in view of Crinion et al. (U.S. 6,181,699).

Regarding claim 1, Drummond-Murray teaches a network device configured to control communication of data frames between stations, comprising:

a logic device configured to detect a condition associated with a resource on the network device **[Drummond-Murray -- Col. 6 lines 19-34 – Switch contains threshold or watermark device which monitors output queue to determine if it is full at a given capacity, i.e. condition on switch]**;

a frame generating device configured to generate a pause frame requesting suspension of data traffic in response to the detection of the condition **[Drummond-Murray -- Col. 4 lines 62-67 – Col. 5 lines 1-3 and Col. 8 lines 16-25 – Flow control frame, i.e. pause frame, is generated which its purpose is to pause traffic from a given device because a condition, i.e. full queue, was detected]**; and

a transmit device configured to transmit the pause frame to at least one station **[Drummond-Murray -- Col. 4 lines 62-67 – Col. 5 lines 1-3 and Col. 7 lines 16-26 and 53-61 – Flow control frame is sent to device which most contributed most to the traffic]**, the pause frame requesting the at least one station to suspend transmission of data frames **[Drummond-Murray Col. 4 lines 65-67 – Col. 5 lines 1-3 – Device receiving PAUSE frame, will cease sending packets to the recipient]** corresponding to the first priority to the network device, wherein the pause frame does not affect transmission of data frames corresponding to a priority other than the first priority **[Drummond-Murray -- Col. 4 lines 1-14 – Specified ports, each differing in the level of priority they service, are individually subject to traffic reduction while others are unaffected. For example, if congestion is caused by low priority traffic,**

**low priority traffic is reduced, while high priority, i.e. more critical traffic, is still passed]**.

Drummond-Murray fails to teach the frame including a priority indicator.

Crinion, however, discloses inserting tag data into a frame which includes priority information for the frame **[Crinion -- Col. 3 lines 13-15 and lines 62-67]**.

In addition, Drummond-Murray indicate that traffic restrictions can be imposed on certain priority flows, for example, low priority flows will be restricted, while high priority, i.e. critical, flows will not be affected because it is not the problem **[Drummond-Murray -- Col. 4 lines 1-14 – Flow restriction based upon priority]**, thereby teaching a first priority, i.e. low priority or high priority.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the priority indication within a frame, as taught by Crinion into the invention of Drummond-Murray, in order to provide more intelligent tag data in frames which allows for more intelligent and rank of order in processing frames based upon critical nature of the frame.

Regarding claim 2, Drummond-Murray and Crinion teach the invention substantially as claimed, as aforementioned in claim 1 above, including wherein the priority indicator includes information representing one of a plurality of types of data frames **[Drummond-Murray -- Col. 4 lines 8-14 – Data frame types include both high and low priority traffic frames]**.

Regarding claim 3, Drummond-Murray and Crinion teach the invention substantially as claimed, as aforementioned in claim 2 above, including wherein the plurality of types of data

frames includes high priority frames and low priority frames **[Drummond-Murray -- Col. 4 lines 8-14 – Specific data frame types include high priority traffic, i.e. frames, and low priority traffic, i.e. frames]**.

Regarding claims 11-12, these are method claims corresponding to the device claimed in claims 1-2. They have similar limitations; therefore, claims 11-12 are rejected under the same rationale.

Regarding claim 13, Drummond-Murray and Crinion teach the invention substantially as claimed, as aforementioned in claim 12 above, including wherein the plurality of types of data frames includes high priority frames and low priority frames **[Drummond-Murray -- Col. 4 lines 8-14 – Specific data frame types include high priority traffic, i.e. frames, and low priority traffic, i.e. frames]**, the first priority corresponding to the first type of data frame **[Crinion -- Col. 7 line 67 – Col. 8 lines 1-10 – Priority in frame is compared to a mask, and depending on bit value, will be marked with proper priority]**.

Regarding claim 21, Drummond-Murray teaches the invention substantially as claimed, a computer-readable medium having a data structure comprising:

a source address field **[Drummond-Murray -- Col. 4 lines 56]**;

a destination address field **[Drummond-Murray -- Col. 4 lines 56]**; and

a pause time field including information representing a length of time for at least one receiving station identified by the destination address field to suspend data transmissions relating

to the priority level in the priority field **[Drummond-Murray -- Col. 4 lines 62-67 – Col. 5 lines 1-3 – Pause field indicates interval, i.e. length of time, for packet transmission to be ceased]**. Drummond-Murray fails to teach the frame including a priority indicator.

Crinion, however, discloses inserting tag data into a frame which includes priority information for the frame **[Crinion -- Col. 3 lines 13-15 and lines 62-67]**.

In addition, Drummond-Murray indicate that traffic restrictions can be imposed on certain priority lows, for example, low priority flows will be restricted, while high priority, i.e. critical, flows will not be affected because it is not the problem **[Drummond-Murray -- Col. 4 lines 1-14]**, thus making it obvious to associate the priority indicator of Crinion with a priority level, i.e. high or low priority, of Drummond-Murray for the benefit and reason explicitly stated in Drummond-Murray, namely, suspending a particular priority of data frame while at the same time, not restricting other more important traffic from being routed **[Drummond-Murray -- Col. 4 lines 1-14]**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the priority indication within a frame, as taught by Crinion into the invention of Drummond-Murray, in order to provide more intelligent tag data in frames which allows for more intelligent and rank of order in processing frames based upon critical nature of the frame.

6. Claims 4-8, 10, 14-16, 18, 20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drummond-Murray (U.S. 6,667,985) and Crinion et al. (U.S. 6,181,699), as applied above to claims 1 and 11 above respectively, in view of Lyon (U.S. 6,721,273).

Regarding claim 4, Drummond-Murray and Crinion teach the invention substantially as claimed, as aforementioned in claim 1 above, but fail to teach a plurality of queues having different levels of priority for storing frame information and a priority detection device able to identify frame priority and store information in the proper priority queue.
Lyon, however, discloses a plurality of input and output queues upon which the cell tap and demultiplexer read the frame priorities and outputs the frames to the respective queues **[Lyon -- Figures 3 and 6, Col. 6 lines 10-29 and Col. 7 lines 28-37].**
It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a plurality of queues based upon priority and assigning frames based upon the frame priority to these queues, as taught by Lyon into the invention of Drummond-Murray and Crinion, in order to improve upon the flow of traffic in and out of a switch and to provide more reliability such that higher priority traffic will be given a better chance of making it through congestion over low priority traffic.

Regarding claim 5, Drummond-Murray-Crinion-Lyon teach the invention substantially as claimed, as aforementioned in claim 4 above, including detecting the condition when frame forwarding information associated with a predetermined number of data frames having the first priority **[Lyon -- Figures 3 and 6, Col. 6 lines 10-29 and Col. 7 lines 28-37 – Plurality of**

**queues exist, each queue responsible for a different priority frame]** are stored in a first one of the plurality of queues **[Drummond-Murray -- Col. 5 lines 51 and 54 (receive and transmit queues), Col. 6 lines 19-40 and Col. 7 lines 16-26 - Condition, i.e. queue is congested whether full or above a threshold capacity, is detected by monitoring and examining the different queue, i.e. different priority, levels based upon the number of frames stored in them]**.

Regarding claim 6, Drummond-Murray-Crinion-Lyon teach the invention substantially as claimed, as aforementioned in claim 1 above, including wherein the condition relates to a congestion condition **[Drummond-Murray -- Col. 5 lines 51 and 54 (receive and transmit queues), Col. 6 lines 19-40 and Col. 7 lines 16-26 - Condition, i.e. queue is congested whether full or above a threshold capacity, is detected by monitoring and examining the different queue, i.e. different priority, levels based upon the number of frames stored in them]** associated with data frames having the first priority **[Lyon -- Figures 3 and 6, Col. 6 lines 10-29 and Col. 7 lines 28-37 – Plurality of queues exist, each queue responsible for a different priority frame]**.

Regarding claim 7, Drummond-Murray-Crinion-Lyon teach the invention substantially as claimed, as aforementioned in claim 1 above, including wherein the condition relates to a congestion condition, the congestion condition occurring when a predetermined number of data frames having the first priority **[Lyon -- Figures 3 and 6, Col. 6 lines 10-29 and Col. 7 lines 28-37 – Plurality of queues exist, each queue responsible for a different priority frame]** are

stored in at least one of an input queue and an output queue **[Drummond-Murray -- Col. 5 lines 51 and 54 (receive and transmit queues), Col. 6 lines 19-40 and Col. 7 lines 16-26 - Condition, i.e. queue is congested whether full or above a threshold capacity, is detected by monitoring and examining the queue levels based upon the number of frames stored in transmit, i.e. output queue]** associated with a first port of the network device **[Drummond-Murray -- Figure 3 and Col. 5 lines 27-45 – Network device, i.e. switch associates each port with an input and output queue]**.

Regarding claim 8, Drummond-Murray-Crinion-Lyon teach the invention substantially as claimed, as aforementioned in claim 1 above, including wherein the condition comprises a congestion condition, the congestion condition occurring when a portion of a predetermined number of data frames having the first priority **[Lyon -- Figures 3 and 6, Col. 6 lines 10-29 and Col. 7 lines 28-37 – Plurality of queues exist, each queue responsible for a different priority frame]** are stored in a queue of a device configured to generate frame forwarding information **[Drummond-Murray -- Col. 5 lines 51 and 54 (receive and transmit queues), Col. 6 lines 19-40 and Col. 7 lines 16-26 - Condition, i.e. queue is congested whether full or above a threshold capacity, is detected by monitoring and examining the queue levels based upon the number of frames stored in the queue]**.

Drummond-Murray-Crinion-Lyon fail to explicitly teach an input queue causes a congestion condition.

Drummond-Murray-Crinion-Lyon, however, do teach that an output queue is monitored and checked for congestion condition.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that any queue, including an input queue, could be just as easily monitored like the output queue in order to provide further congestion control and prevent such cascading backups due to congestion.

Regarding claim 10, Drummond-Murray-Crinion-Lyon teach the invention substantially as claimed, as aforementioned in claim 1 above, further comprising:

a receive device configured to receive data frames from the stations **[Drummond-Murray -- Col. 5 lines 46-52 – Receive queues receive packets from respective ports]**, the data frames having a priority indicator **[Crinion -- Col. 3 lines 13-15 and lines 62-67 – Tag inserted in frame contains frame priority information]**; and

priority mapping logic configured to convert the priority indicator received with the respective data frames to one of a number of priority levels supported by the network device **[Lyon -- Figure 6 and Col. 7 lines 19-37 and Col. 7 lines 54-67 – Col. 8 lines 1-8 – Frames, i.e. cells, as they arrive, processes them and stores them into the proper queue based upon the priority identification in the frame]**.

Regarding claim 14, Drummond-Murray-Crinion-Lyon teach the invention substantially as claimed, as aforementioned in claim 11 above, including identifying a priority associated with the queue, the priority corresponding to the first priority **[Lyon -- Figures 3 and 6, Col. 6 lines 10-29 and Col. 7 lines 28-53 – Cells, i.e. frames are stored based upon their priority in the proper queue having the necessary priority, i.e. higher priority queues and lower priority**

**queues. Therefore, the device must ascertain the priority of the queue in order to know where to store the frame]**.

Regarding claims 15, 16 and 20, these are method claims relating to the device claimed in claims 7, 5 and 10 respectively. They have similar limitations; therefore, claims 15, 16 and 20 are rejected under the same rationale.

Regarding claim 18, Drummond-Murray-Crinion-Lyon teach the invention substantially as claimed, as aforementioned in claim 16 above, including wherein the at least one station stops transmitting data frames having the first priority for a period of time after receiving the pause frame and continues transmitting data frames having a priority other than the first priority **[Drummond-Murray -- Col. 4 lines 1-14 – Specified ports, each differing in the level of priority they service, are individually subject to traffic reduction while others are unaffected. For example, if congestion is caused by low priority traffic, low priority traffic is reduced, while high priority, i.e. more critical traffic, is still passed]**.

Regarding claim 22, Drummond-Murray teaches the invention substantially as claimed, a data communication system, comprising:

a first device configured to:

receive data frames from at least one station **[Drummond-Murray -- Col. 5 lines 46-52 – Receive queues receive packets from respective ports]**,

detect a congestion condition when at least a predetermined number of data frames are being processed by the first device **[Drummond-Murray -- Col. 5 lines 51 and 54 (receive and transmit queues), Col. 6 lines 19-40 and Col. 7 lines 16-26 - Condition, i.e. queue is congested whether full or above a threshold capacity, is detected by monitoring and examining the queue levels based upon the number of frames stored in transmit, i.e. output queue]**,

generate a pause frame requesting suspension of data transmissions in response to the congestion condition **[Drummond-Murray -- Col. 4 lines 62-67 – Col. 5 lines 1-3 and Col. 8 lines 16-25 – Flow control frame, i.e. pause frame, is generated which its purpose is to pause traffic from a given device because a condition, i.e. full queue, was detected]**, and

transmit the pause frame to at least one station **[Drummond-Murray -- Col. 4 lines 62-67 – Col. 5 lines 1-3 and Col. 7 lines 16-26 and 53-61 – Flow control frame is sent to device which most contributed most to the traffic]**; and

a second device configured to:

receive the pause frame **[Drummond-Murray -- Col. 4 lines 66 – Intended device will receive PAUSE frame]**; and

suspend transmission of data frames **[Drummond-Murray Col. 4 lines 65-67 – Col. 5 lines 1-3 – Device receiving PAUSE frame, will cease sending packets to the recipient]** relating to the first priority and continuing transmission of data frames relating to a second priority **[Drummond-Murray -- Col. 4 lines 1-14 – Specified ports, each differing in the level of priority they service, are individually subject to traffic**

**reduction while others are unaffected. For example, if congestion is caused by low priority traffic, low priority traffic is reduced, while high priority, i.e. more critical traffic, is still passed]**.

Drummond-Murray fails to teach the frame including a priority indicator and determining a priority associated with the received data frames.

Crinion, however, discloses inserting tag data into a frame which includes priority information for the frame **[Crinion -- Col. 3 lines 13-15 and lines 62-67]**.

In addition, Drummond-Murray indicate that traffic restrictions can be imposed on certain priority lows, for example, low priority flows will be restricted, while high priority, i.e. critical, flows will not be affected because it is not the problem **[Drummond-Murray -- Col. 4 lines 1-14]**, thus making it obvious to associate the priority indicator of Crinion with a priority level, i.e. high or low priority, of Drummond-Murray for the benefit and reason explicitly stated in Drummond-Murray, namely, suspending a particular priority, i.e. first priority of data frame while at the same time, not restricting other more important traffic from being routed **[Drummond-Murray -- Col. 4 lines 1-14]**.

Furthermore, Lyon discloses a plurality of input and output queues upon which the cell tap and demultiplexer read the frame priorities, as frames are received and outputs the frames to the respective queues **[Lyon -- Figures 3 and 6, Col. 6 lines 10-29 and Col. 7 lines 28-37]**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the priority indication within a frame, as taught by Crinion, along with determining a priority associated with the received data frames, as taught by Lyon into the invention of Drummond-Murray, in order to provide more intelligent tag data in frames which

allows for more intelligent and rank of order in processing frames based upon the critical nature of the frame, to improve upon the flow of traffic in and out of a switch and to provide more reliability such that higher priority traffic will be given a better chance of making it through congestion over low priority traffic.

Regarding claim 23, Drummond-Murray teaches the invention substantially as claimed, a first network device, comprising:

a receive device configured to receive data frames from at least one of the network stations and other network devices **[Drummond-Murray -- Col. 5 lines 46-52 – Receive queues receive packets sent from various other devices on at the respective ports]**; and

data frame processing logic configured to:

identify a received data frame as a pause frame **[Drummond-Murray -- Col. 4 lines 66 – Intended device will receive PAUSE frame, therefore, it is obvious that the device has identified the type of frame as a PAUSE frame]**,

suspend transmission of data frames **[Drummond-Murray Col. 4 lines 65-67 – Col. 5 lines 1-3 – Device receiving PAUSE frame, will cease sending packets to the recipient]** corresponding to the first priority, and continue transmission of data frames corresponding to priorities other than the first priority **[Drummond-Murray -- Col. 4 lines 1-14 – Specified ports, each differing in the level of priority they service, are individually subject to traffic reduction while others are unaffected. For example, if congestion is caused by low priority traffic, low priority traffic is reduced, while high priority, i.e. more critical traffic, is still passed]**.

Drummond-Murray fails to teach the frame including a priority indicator and mapping the priority indicator to a first priority.

Crinion, however, discloses inserting tag data into a frame which includes priority information for the frame **[Crinion -- Col. 3 lines 13-15 and lines 62-67]**.

In addition, Drummond-Murray indicate that traffic restrictions can be imposed on certain priority lows, for example, low priority flows will be restricted, while high priority, i.e. critical, flows will not be affected because it is not the problem **[Drummond-Murray -- Col. 4 lines 1-14]**.

Furthermore, Lyon discloses processing, i.e. mapping, the received frames to a priority based on the identification in the frame **[Lyon -- Figure 6 and Col. 7 lines 19-37 and Col. 7 lines 54-67 – Col. 8 lines 1-8 – Frames, i.e. cells, as they arrive, processes them and stores them into the proper queue based upon the priority identification in the frame]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the priority indication within a frame, as taught by Crinion, along with mapping the received frames to a priority based on frame identification, as taught by Lyon into the invention of Drummond-Murray, in order to provide more intelligent tag data in frames which allows for more intelligent and rank of order in processing frames based upon critical nature of the frame, to improve upon the flow of traffic in and out of a switch and to provide more reliability such that higher priority traffic will be given a better chance of making it through congestion over low priority traffic

7. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drummond-Murray (U.S. 6,667,985) and Crinion et al. (U.S. 6,181,699), as applied above to claims 1 and 11 above respectively, in view of Applicant's Admitted Prior Art (AAPA)

Regarding claim 9, Drummond-Murray and Crinion teach the invention substantially as claimed, as aforementioned in claim 1 above, including priority information in frame **[Crinion -- Col. 3 lines 13-15 and lines 62-67 – Tag inserted in frame contains frame priority information]**.

Drummond-Murray and Crinion fail to explicitly teach transmitting an auto-negotiation message to a network device, i.e. station.

AAPA, however, teaches that the auto-negotiation feature is defined in the IEEE 802.3 standard. Therefore, transmitting messages using such a feature was well known and in the public's knowledge at the time the invention was made.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the transmission of messages to network devices using the auto-negotiation feature of the IEEE 802.3 standard into the invention of Drummond-Murray and Crinion, in order to provide a useful and convenient way to communicate reliably with other network devices using a standardized feature.

Regarding claim 19, this is a method claim corresponding to the device claimed in claim 9. It has similar limitations; therefore, claim 19 is rejected under the same rationale.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mauro Jr. whose telephone number is 571-272-3917. The examiner can normally be reached on M-F 8:00a.m. - 4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJM
November 15, 2004

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